CLAIMS

I CLAIM:

1.   A self-aligning tapping tool comprising:

2   an elongate handle having a longitudinal counterbore through a first end;

a tap received in the counterbore;

4   a collar operatively secured to the tap, the collar being slightly smaller than the

counterbore to enable slidable movement and to prevent rotation of the tap relative to the handle;

6   a retainer secured to the handle at the first end to retain the collar in the

counterbore and having a central opening receiving the tap; and

8   biasing means in the counterbore for biasing the tap and the collar outwardly to

extend the tap when the handle is turned to thread an opening in a workpiece.

2.   The self-aligning tapping tool of claim 1 wherein the handle further

2   comprises a slot at a second end for receiving a drive tool.

3.   The self-aligning tapping tool of claim 1 wherein the collar has a flatted

2   outer side engaging a counterbore flatted side.

4.   The self-aligning tapping tool of claim 1 wherein the collar comprises a

2   square collar and the counterbore has a square cross section.

5.   The self-aligning tapping tool of claim 1 wherein the collar is secured tot

2   eh tap with screws that lock in flutes of the tap.

6.   The self-aligning tapping tool of claim 1 wherein the retainer comprises an

2   annular retainer having a plurality of radial through openings receiving guide screws extending

into flutes of the tap.

7.   The self-aligning tapping tool of claim 1 wherein the biasing means

2   comprises a spring acting on the collar.

8.   The self-aligning tapping tool of claim 1 wherein the biasing means

2   comprises a spring acting on an inner end of the tap.

9.   The self-aligning tapping tool of claim 1 wherein the biasing means

2   comprises a first spring acting on the collar and a second spring, received in the first spring,

acting on the tap.

10.   The self-aligning tapping tool of claim 9 wherein the counterbore

2   comprises a shoulder defining an inner seat for the first spring.

11.　　A self-aligning handheld tapping tool comprising:

2　　　　　an elongate cylindrical handle having a longitudinal, rectangular counterbore

through a first end and a slot at a second end for receiving a drive tool;

4　　　　　a tap received in the counterbore;

　　　　　a rectangular collar operatively secured to the tap, the collar being slightly smaller

6　than the counterbore to enable slidable movement and to prevent rotation of the tap relative to the

handle;

8　　　　　an annular retainer secured to the handle at the first end to retain the collar in the

counterbore and having a central opening receiving the tap; and

10　　　　　biasing means in the counterbore for biasing the tap and the collar outwardly to

extend the tap when the handle is turned to thread an opening in a workpiece.

12.　　The self-aligning handheld tapping tool of claim 11 wherein the slot is

2　square shaped for receiving a ratchet device.

13.　　The self-aligning handheld tapping tool of claim 11 wherein the retainer

2　has a flat end surface for engaging a workpiece.

14.　　The self-aligning handheld tapping tool of claim 11 wherein the collar

2　comprises a square collar and the counterbore has a square cross section.

15.   The self-aligning handheld tapping tool of claim 11 wherein the collar is

2   secured to the tap with screws that lock in flutes of the tap.

16.   The self-aligning handheld tapping tool of claim 11 wherein the retainer

2   has a plurality of radial through openings receiving guide screws extending into flutes of the tap.

17.   The self-aligning handheld tapping tool of claim 11 wherein the biasing

2   means comprises a spring acting on the collar.

18.   The self-aligning handheld tapping tool of claim 11 wherein the biasing

2   means comprises a spring acting on an inner end of the tap.

19.   The self-aligning handheld tapping tool of claim 11 wherein the biasing

2   means comprises a first spring acting on the collar and a second spring, received in the first

spring, acting on the tap.

20.   The self-aligning handheld tapping tool of claim 19 wherein the

2   counterbore comprises a shoulder defining an inner seat for the first spring.